

Wisconsin Land and Water Conservation

Annual Progress Report — 2003



Photo by Suzanne Wade

Summarizing Wisconsin's achievements in reducing polluted runoff and conserving land and water resources.

Land and Water Resource Management Plans

Priority Watershed and Lake Projects

- ♦ Wisconsin Department of Natural Resources
- ♦ Wisconsin Department of Agriculture, Trade, and Consumer Protection

2003 Annual Progress Report

Wisconsin Land and Water Conservation Board

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INTRODUCTION

This report to the Wisconsin Land and Water Conservation Board summarizes and evaluates progress made throughout Wisconsin in 2003 on implementing land and water conservation programs funded or administered by the Department of Agriculture, Trade, and Consumer Protection (DATCP) and the Department of Natural Resources (DNR). The report is submitted in part to meet the requirements under s. 281.65(4)(o) and s. 92.14 (12), Wis. Stats.

From the farmers in the Coon Creek watershed to Aldo Leopold, Wisconsin has a history of supporting land conservation efforts. Since 1933, Wisconsin landowners have worked to reduce soil erosion from farmland and to protect water quality. Substantial progress has been made. In the last 20 years alone, the percentage of farmland that has been controlled to tolerable eroding rates or better has increased almost 28% — from 65% to 82%.

In 2003, county land conservation departments and municipalities delivered about \$43.5 million worth of cost-shared practices and technical assistance to rural and urban areas from both state (about \$26 million) and federal (\$17.5 million) funds. Significant contributions of money, time, and other resources also came from counties, municipalities, landowners, and non-governmental organizations, the amount of which is beyond the scope of this report.

The \$33.3 million in cost sharing helped nearly 2000 landowners install about 3500 conservation practices to help protect and improve Wisconsin's land and water resources. In addition, the 20,500 landowners participating in the Farmland Preservation Program received \$16.4 million—an average of \$801 per claimant—for their efforts to preserve farmland and meet soil and water standards. Approximately 366 locally based conservation staff helped administer the state and federally funded programs.



While past conservation projects have been successful, more work remains to protect Wisconsin's land and water resources. The Department of Natural Resources estimates that about 40 percent of the state's rivers and streams and about 90 percent of the inland lakes remain degraded or threatened by polluted runoff. Wisconsin's land and water conservation programs help landowners install conservation practices to reduce polluted runoff.

County land conservation committees and departments, and others who implement conservation programs locally, provided most of the data used in the report. The program data reflect accomplishments from 2003; discussions of program policy include progress made during both 2003 and 2004. The programs listed below are discussed in this report.

- Land and Water Resource Management Plans (LWRM)
- Priority Watersheds and Lake Projects (PWP)
- Targeted Runoff Management Grant Projects (TRM)
- Urban Nonpoint Source and Stormwater Management Grant Projects (UNPS)
- Farmland Preservation Program (FPP)
- Conservation Reserve Enhancement Program (CREP)

Coles Creek Reclassification



Like to go trout fishing? Check out Coles Valley Creek in Monroe County, which has been recently restored to a class 1 trout stream. Monroe County identified Coles Valley Creek, designated a Class 2 cold water fishery, as a high priority for improvement in its 1999 Land and Water Resource Management plan. In 2003, the Department of Natural Resources reclassified Coles Valley Creek to a Class 1 Trout Stream.

Degraded by a decade of poor land use, the stream had been reduced to a shallow, muddy waterway with highly eroded banks although remnant populations of native brook trout had persisted.

Work began in 1999 when the Monroe County Land Conservation Department contacted the United States Fish and Wildlife Service about the project. Project sponsors provided over \$280,000 in grants and cost-share funds to complete the restoration. The Partners for Fish and Wildlife Program at the Necedah Wildlife Refuge helped to narrow and deepen the creek, install fish habitat structures, and stabilize the banks. Comprehensive stream surveys next year will verify water quality improvement.



Project sponsors included the Monroe County Land Conservation Department, DNR, DATCP, Necedah National Wildlife Refuge, United States Fish and Wildlife Services' Partners for Fish and Wildlife, Natural Resources Conservation Service, Sparta Rod and Gun Club and the National Wild Turkey Federation. The Monroe County Justice Department provided inmates to build the fish habitat structures.



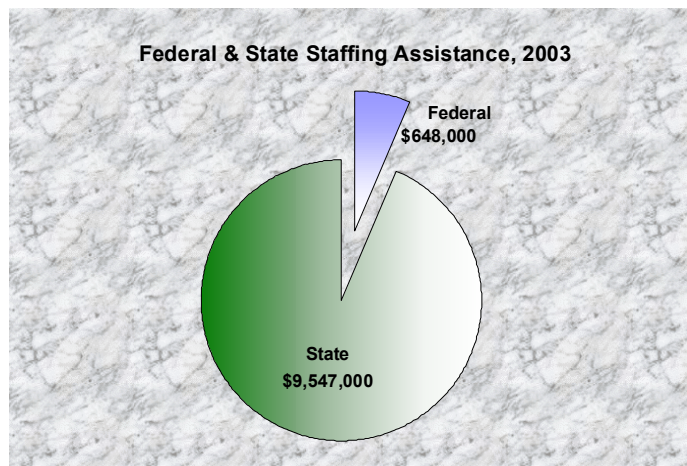
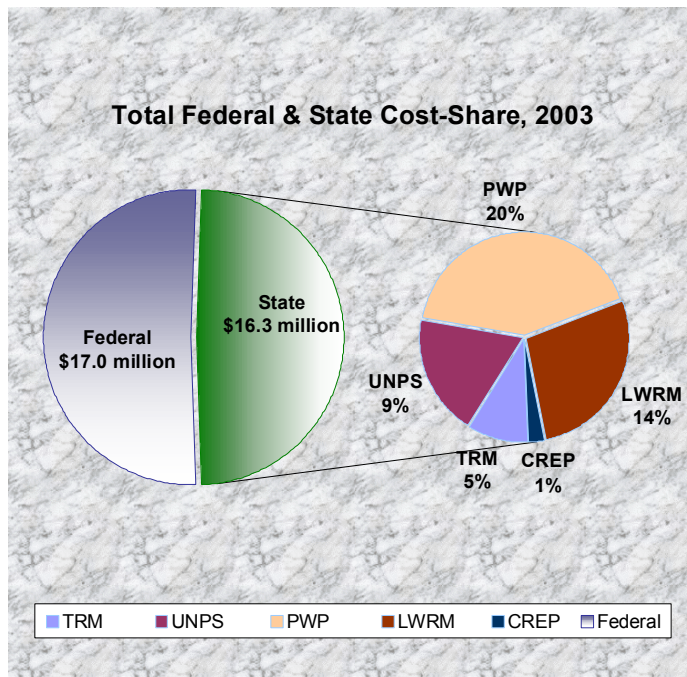
PROGRAM MANAGEMENT: Supporting Locally-led Conservation

County land conservation departments (LCDs) and municipalities delivered about \$43.5 million worth of cost-shared conservation practices and staffing support to rural and urban areas in 2003 from both state (about \$26 million) and federal (\$17.5 million) funds*. Additional contributions of money, time and other resources came from counties, municipalities, landowners, and non-profit organizations, the amount of which is beyond the scope of this report.

Land and Water Resource Management Program

The Land and Water Resource Management (LWRM) program supports locally-led conservation efforts by providing counties staffing grants to implement strategies designed to meet local land and water priorities identified in approved LWRM plans.

Counties also received grants from DATCP to provide cost sharing to landowners to implement conservation practices. An analysis of county cost-share spending indicated that the percentage of cost-share funds expended from the allocation might be increased if counties were given additional flexibility to transfer funds between counties, as is currently the practice in the Priority Watershed and Lake Program (PWP). Subject to Land and Water Conservation Board (LWCB) approval, DATCP may allow



- \$9.5 million:** amount provided by DATCP to counties for staffing and support
- 366:** number of county-based conservation staff
- \$5.6 million:** amount provided by NRCS for local technical assistance
- \$5.4 million:** amount allocated by DATCP for LWRM cost-sharing in 2003
- 85:** percent of cost sharing spent in 2003 or extended to 2004

transfer of cost-share funds between counties beginning in 2005.

* These totals do not include federal or state CREP incentive payments

Priority Watershed and Lake Program

This program targets cost sharing, technical assistance and education to designated watersheds impacted by polluted runoff. Projects set pollution reduction goals based on inventories of croplands, streambanks or shorelines, livestock and manure handling areas, streets, construction areas, and other urban sources.



DNR administers funds for best management practices (BMPs) and DATCP administers funds for staff that provide technical assistance, education, design and project management. Projects are implemented over a thirteen to fourteen year period. Legislation passed in 1997 ended new project selection. All projects will be completed by 2009. As projects end, cost-share money is reallocated to Targeted Runoff Management (TRM) projects, and staffing grants are reallocated to counties by DATCP through the joint annual allocation plan.

Critical Sites

The vast majority of practices in priority watershed or lake projects are installed on a voluntary basis. However, projects selected after 1993 were required to identify as critical those sites that must be addressed to achieve a reasonable likelihood that the project's water quality objectives can be met. During implementation, local project managers work closely with landowners that have critical sites to install BMPs or change management practices. For those cases where progress is not being made, the State can and does take enforcement action. Data is collected for livestock, cropland and streambank/shoreline critical sites. This data is detailed under those sections of this report.

Targeted Runoff Management Grants

DNR administers TRM grants to local units of government to address high-priority water resource problems stemming from both urban and rural runoff. Legislation passed in 1997 and

Priority Watersheds

- 47:** number of priority watershed and lake projects currently being implemented
 - 38:** number of closed or completed projects
 - 1,582:** number of participating landowners in 2003
 - 6,528:** total number of participating landowners in the 47 active projects since project inception
 - 80:** number of nonpoint source impaired waters benefiting from project implementation
- status as of 2003*

TRM Grants

- 31:** number of TRM projects awarded in 2003 (19 agricultural, 12 urban)
- 93:** total number of TRM projects, 2000-2003 (47 agricultural, 46 urban)
- 51:** number of projects completed through 2003

Urban NPS Grants

- 41:** number of UNPS project grants awarded in 2003 (21 planning, 20 design/construction)
- 144:** total number of projects, 1999-2003 (71 planning, 73 design/construction)
- 74:** number of completed projects through 2003

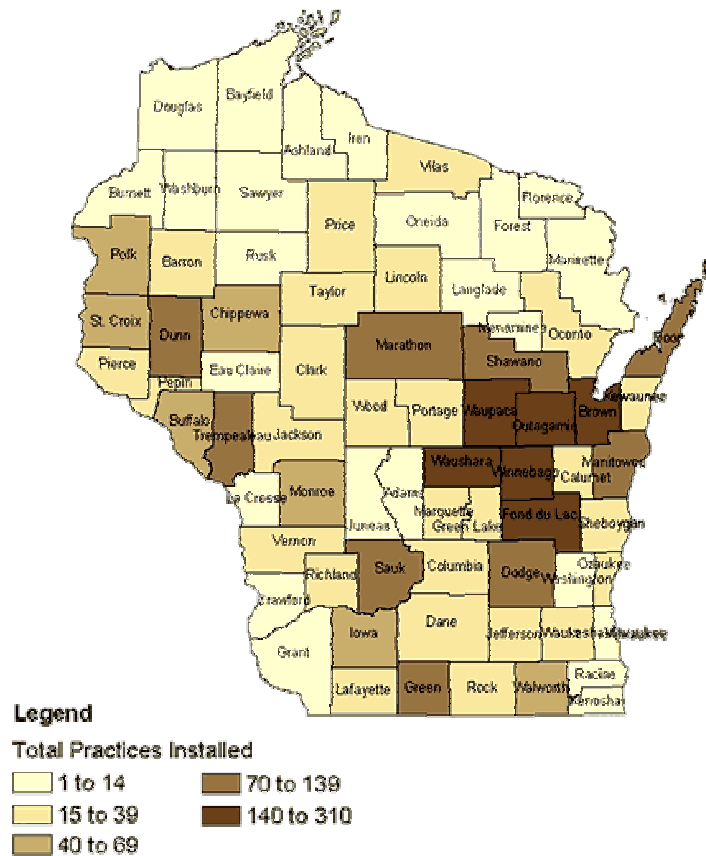
Best Management Practices

- 1090:** number of BMPs installed as part of the LWRM program
- 2400:** number of BMPs installed through TRM, UNPS, and PWP
- 84.5:** percentage of practices under \$2000 installed using LWRM funds
- 7.2:** percentage of practices over \$10,000 installed using LWRM funds

Critical Sites

- 25:** number of priority watershed & lake projects addressing critical sites
- 1,675:** number of critical sites identified in priority watershed plans
- 87:** percent of identified critical sites resolved as of Dec. 31, 2003

Total Agricultural Practices Installed



Data displayed on maps only represents conservation practices funded by DNR and DATCP

1999 created and refined this funding mechanism and the first 19 projects were selected in 1999. TRM projects are generally smaller in size than a subwatershed and last two years, with a possible 1-year extension. Typical TRM-funded projects—cost-shared at a 70% rate with caps on some practices—involve stream bank protection, wetland construction, detention ponds, and livestock manure management.



Urban Nonpoint Source and Storm Water Management Grants

Urban Nonpoint Source (UNPS) grants are awarded for both planning and construction projects. Projects funded by these grants are site-specific, targeted at high-priority water quality problems and last two years with a possible 1-year extension. Governmental units are eligible for a grant even if the governmental unit is covered by a storm water permit under ch. NR 216, Wis. Adm. Code.

Planning grants can pay for 70% of the costs—up to \$85,000—of stormwater management planning, information and education, ordinance and utility development and enforcement. Construction grants may share 50% of the cost of practices such as storm water detention ponds, infiltration practices, and streambank and shoreline stabilization, up to \$150,000.



Photo by Bob Queen

Restoring Osceola Creek



Osceola Creek encompasses a nine square mile drainage area in Polk County, about 45 miles northeast of the Minneapolis-St. Paul metropolitan area. The watershed is predominantly agricultural cash croplands. It also includes the Village of Osceola that experienced a 31% population growth from 1980 to 1990 and continues to grow bringing with it an increase in commercial and residential development. Osceola Creek was designated a small-scale priority watershed project in 1994 because of sediment and phosphorus from eroding croplands, a livestock operation and city streets.

Osceola Creek is a cold water fishery that used to flow through three constructed impoundments. In September 2002 a dam failed. After emergency repairs were made through the DNR, the stream banks were bare and slumping. With help from the United States Fish and Wildlife Service (USFWS), Polk County Land and Water Resources Dept. developed a plan to restore and stabilize the creek banks. The Priority Watershed and Lake Program paid 70% of the cost and the rest came from USFWS. The USFWS provided seed and erosion control matting to stabilize bare areas. Local landscapers, Osceola students, University of Wisconsin (UW) Extension, city workers and Trout Unlimited volunteers were recruited to help plant shrubs and anchor bio-logs along the stream banks to minimize erosion runoff.



IMPLEMENTING RUNOFF PERFORMANCE STANDARDS

Since October 1, 2002, Wisconsin has implemented a new comprehensive approach to controlling polluted runoff from agricultural, urban and transportation land uses. The core of this approach is statewide performance standards and prohibitions for activities that can cause nonpoint source water quality problems (see sidebar). The administrative rules that comprise this approach, seven DNR and one DATCP, do the following:

- define conservation practices (BMPs) and establish a technical standards development process to meet the performance standards;
- establish procedures and guidelines for two new grant programs (TRM and UNPS) and county LWRM plans;
- create construction and stormwater management model ordinances; and
- streamline funding and administrative procedures.

AGRICULTURAL IMPLEMENTATION HIGHLIGHTS

Most of the conservation practices listed in this report contribute toward meeting the performance standards and agricultural prohibitions. In addition, DNR, DATCP and other partners created the tools necessary to make implementation happen:

- Partners developed a strategy that defines roles, responsibilities and implementation steps.
- Some counties have or are enacting ordinances or fee systems tied to the performance standards and prohibitions.
- An intergovernmental agreement was developed and will serve as the model for working agreements with other counties.
- Guidance, forms and letter templates were developed for counties to use with landowners.
- A multi-agency committee created educational materials.
- Research being conducted on buffers will lead to a performance standard after 2005.

Agricultural performance standards

- Cropland soil erosion can't exceed "tolerable" rates
- Manure storage facilities, when built, modified or abandoned, must meet accepted standards
- Clean runoff must be diverted away from livestock and manure storage areas located near stream, rivers, lakes or areas susceptible groundwater contamination
- Application of manure and other fertilizers must be applied consistent with an approved nutrient management plan

Manure management prohibitions

- No overflow of manure storage facilities
- No unconfined manure piles near waterbodies
- No direct runoff from feedlots or stored manure into state waters
- No trampled streambanks or shorelines from livestock

- County soil and water standards used in the Farmland Preservation Program (FPP) are being revised to required compliance with the performance standards and prohibitions.
- Revised County Plans must include a strategy to implement the performance standards and prohibitions.

URBAN PERFORMANCE STANDARDS

The state also has performance standards that apply to construction and post-construction runoff, developed urban areas and large turf areas. Performance standards apply to construction sites with one or more acres of land disturbance. For new development, re-development or transportation projects, construction-site erosion performance standards became effective October 2002 and the post-construction stormwater management performance standards became effective October 2004.

In built-up urban areas, municipal governments with a population density of 1,000 people or more per square mile are responsible for educating residents on proper management of fertilizers and

yard and pet waste. Managers of public and private golf courses and other unpaved turf areas over five acres in size will need to apply fertilizers according to soil test results by March 2008. Performance standards for developed urban areas will be phased in until 2013.

Municipalities subject to a storm water permit under ch. NR 216, Wis. Adm. Code, will have additional requirements. They must reduce total suspended solids within the municipal boundary by 20 percent by March 10, 2008 and 40% by March 10, 2013. This is in addition to other federal Phase 2 requirements.

Urban Implementation Highlights

- Ch. NR 216, Wis. Adm. Code, was revised and will be used to implement most of the non-agricultural performance standards
- 15 technical standards were written to meet the construction/post-construction performance standards
- ch. NR 151, Wis. Adm. Code, transportation performance standards have been incorporated into ch. TRANS 401, Wis. Adm. Code, the Department of Transportation's administrative rule
- Educational materials and training are helping to implement post-construction performance standards, rain gardens, low impact development and other methods to control stormwater runoff
- By March 2008, fertilizer application to turf area, lawns and other turf areas of five or more acres must be based on soil tests.

Non-agricultural performance standards

New Development or Redevelopment

- During construction, 80% of the sediment runoff must be maintained on-site.
- After construction, stormwater must be managed to:
 - Control suspended solids and peak flow,
 - Infiltrate runoff,
 - Buffer streams, rivers, lakes and wetlands,
 - Control fueling and maintenance areas to prevent petroleum product runoff.

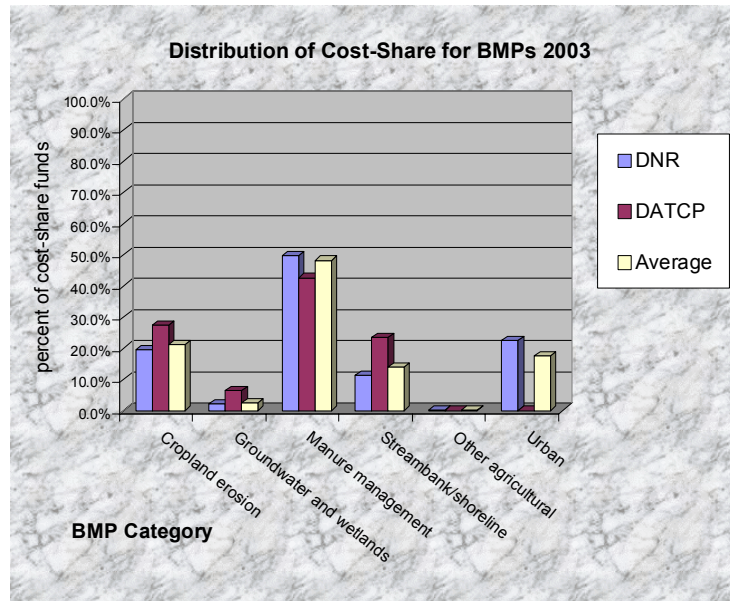
Developed Urban Areas

- Public education and programs on the proper management of leaves and grass clippings, lawn and garden fertilizers, and pet wastes, and the prevention of oil and chemicals disposal into storm sewers, must be conducted to utilize citizens in the effort to control polluted residential runoff from homes and gardens.
- Fertilizer application on lawns and other turf areas of five or more acres must be based on soil tests.
- Illicit stormwater discharges must be detected and eliminated.

CONSERVATION RESULTS

BEST MANAGEMENT PRACTICES INSTALLED[†]

Data tracked by DNR and DATCP show that about 3500 agricultural and urban BMPs were fully or partially installed during 2003. The Land and Water Resource Management program structure encourages installation of low-cost practices. The three most popular BMPs installed under this program were well abandonments, grassed waterways, and shoreline and streambank protection practices. Grantees rely on DNR or Natural Resources Conservation Service/Farm Service Agency administered grant programs for most higher cost practices such as manure storage or barnyard runoff control systems.



CROPLAND SOIL EROSION CONTROL

Keeping productive soil on the land and out of the water is one of Wisconsin's primary conservation goals. The state and counties administer a variety of programs that work together to help landowners reduce soil erosion to tolerable ("T") levels or below.

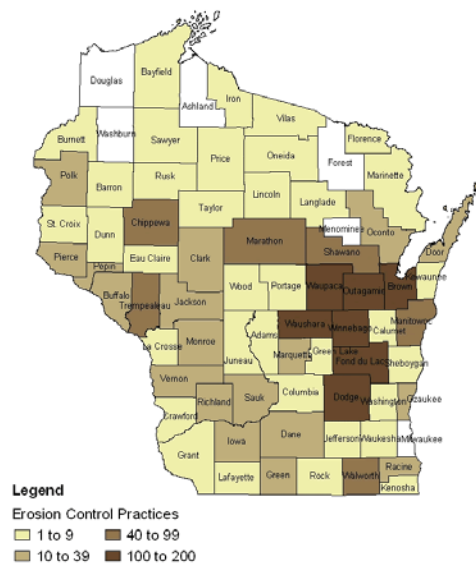
In 2003, about 1,950 farmers[‡] used state cost-sharing through LWRM, TRM or Priority Watershed and Lake programs to install agricultural BMPs that help reduce soil erosion, including:

- About 114,000 acres of cropland practices such as conservation tillage, cover crops and windbreaks to hold soil in place and grassed waterways to repair and prevent gullies.
- 212 practices to deflect or slow down runoff from slopes, such as grade stabilization structures.

Table 1 indicates the number and types of erosion control practices installed through the LWRM,

TRM and PW programs. Some practices installed primarily for other purposes also have erosion control benefits.

Erosion Control Practices



Data displayed on map only represents conservation practices funded by DNR and DATCP

[†] Conservation practices installed using state dollars only.

[‡] Each cost-share agreement counted as 1 landowner

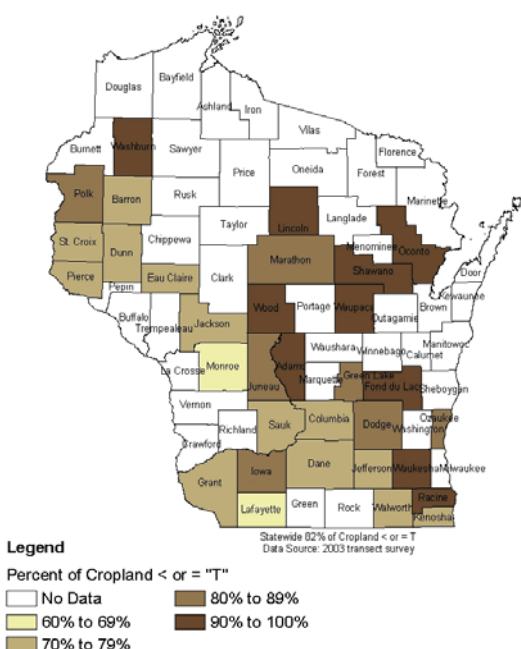
Table 1 **Erosion Control Practices Installed with State Funds**

Practices	Quantity Installed		# of Cost-Share Agreements With Landowners	
	LWRM	PWP/TRM	LWRM	PWP/TRM
Conservation tillage, cover crops, wind breaks, gully controls (<i>acres</i>)	93	114,097	210	1538
Grade stabilization and drainage structures, berms, terraces (<i>number</i>)	150	62	102	47
Livestock fencing, diversions, waterway system (<i>feet</i>)	97,580	6,299	22	4

Sediment Reductions In Priority Watershed And Lake Projects

While it's difficult to estimate the total amount of soil erosion and water-borne sediment that was kept out of state waters through the use of these best management practices, nearly all Priority Watershed and Lake projects inventoried sources of soil erosion and developed goals to control sediment resulting from cropland soil erosion. Many also set specific goals to control gully erosion. The total goal for both cropland and gully erosion control was 509,344 tons per year (about 40% of the estimated load). By the end of 2003, the 47 active projects had reduced sediment delivery to surface water by 273,788 tons per year. This represents 54 percent of the projects' goals.

2003 Transect Survey Results



Cropland Erosion Critical Sites

Twenty-three Priority Watershed and Lake projects identified a total of 1,298 sites deemed critical sources of cropland soil erosion. By the end of 2003, landowners and county staff had resolved 1,117 of those sites—86 percent—through implementation of best management practices or management changes.

Transect Survey

Landowners continue to make progress towards conserving productive soil on the land. Counties have completed the Transect soil erosion survey since 1999. The Transect survey is a statistical method for estimating cropland soil erosion based on a visual examination of field conditions. In 2003, 32 counties conducted the Transect survey to measure the rate of soil erosion. In these counties, approximately 82% of fields were at or below the tolerable rate of soil loss, which has not changed measurably since 2000. This is particularly noteworthy given the increase in row crops—such as corn and soybeans—that typically increase soil erosion. To offset the increase in these crops, landowners are implementing cropping practices such as contour farming and no-till that help reduce soil erosion.

Farmland Preservation Program

The Farmland Preservation Program identifies and protects agricultural areas against unplanned or poorly planned development. The program is designed to preserve agricultural land and open spaces by promoting orderly land use planning and development, by securing soil and water conservation, and providing tax relief to farmers in the program. The FPP continues to be a major force in maintaining soil conservation on the land.

All landowners receiving the credit must meet county soil and water conservation standards, which in all counties require soil erosion rates to

be at or below tolerable rates. Landowners follow conservation plans that determine crop rotations and tillage methods, among other practices, that help to reduce soil erosion. County land

8.2 million:	<i>number of Wisconsin's 16.2 million acres of farmland protected through the FPP</i>
20,500:	<i>number of farmland owners received farmland preservation tax credits</i>
\$16.4 million:	<i>value of farmland preservation tax credit</i>
\$801:	<i>average tax credit per claimant</i>
23:	<i>percentage of the total property taxes offset by farmers who claimed the credit</i>
37:	<i>percentage of Wisconsin's potentially eligible farmers claimed the credit</i>

and in 2008 for all other fields. Wisconsin also requires farmers to have a NM plan when they are regulated under a county ordinance or state permit and when they accept government cost-share dollars for the installation of manure storage or barnyard runoff control structures. A properly developed and implemented NM plan will balance available nutrients with crop needs; reduce water pollution from excess applications of plant nutrients; maintain soil productivity; maximize profitability; achieve realistic crop yields; and have value to the producer.

DATCP tracks acres covered by a nutrient management plan through bulk fertilizer suppliers and through the nutrient management plan checklist submitted by farmers, agronomists, and governmental agency staff for every plan developed through a government program. Since 1995, Wisconsin farmers have reported 5,430 nutrient management plans to DATCP covering approximately 1.9 million acres.

conservation department staffs check each participating landowner for compliance with the conservation standards at least once every six years.

Farmland Preservation – the future

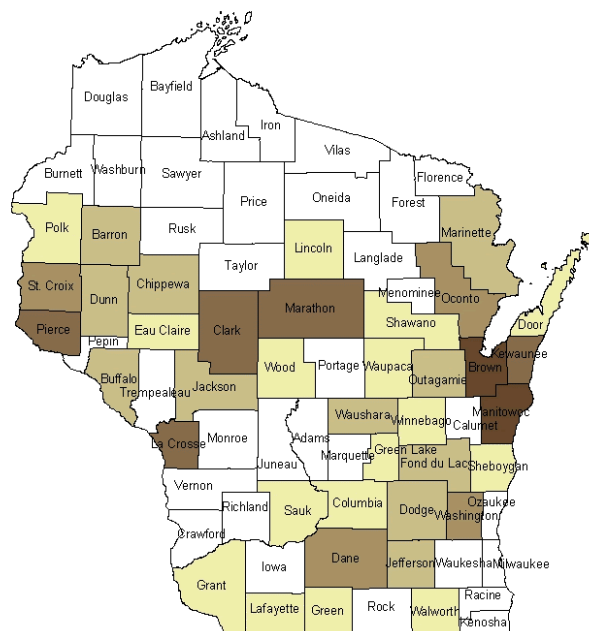
During 2004, LCDs started to update the county conservation standards to include the agricultural performance standards. Beginning in 2005, many FPP participants will need to meet a compliance schedule that includes the expanded conservation standards in order to receive the tax credit. The LWCB formed a committee in 2004 to explore the future of the farmland preservation program. This committee provided input to the DATCP Secretary.

NUTRIENT MANAGEMENT

2003 Planning Progress and Trends

The nutrient management (NM) agricultural performance standard requires landowners to develop and follow a NM plan to manage soil nutrient levels to maintain or reduce nutrient delivery. The NM standard was effective in October 2003 for new cropland fields, and is effective beginning in 2005 for fields in source water protection areas, those draining to 303(d) impaired waters, and those draining to outstanding and exceptional resource waters

New Acres in Nutrient Management Plans for 2003

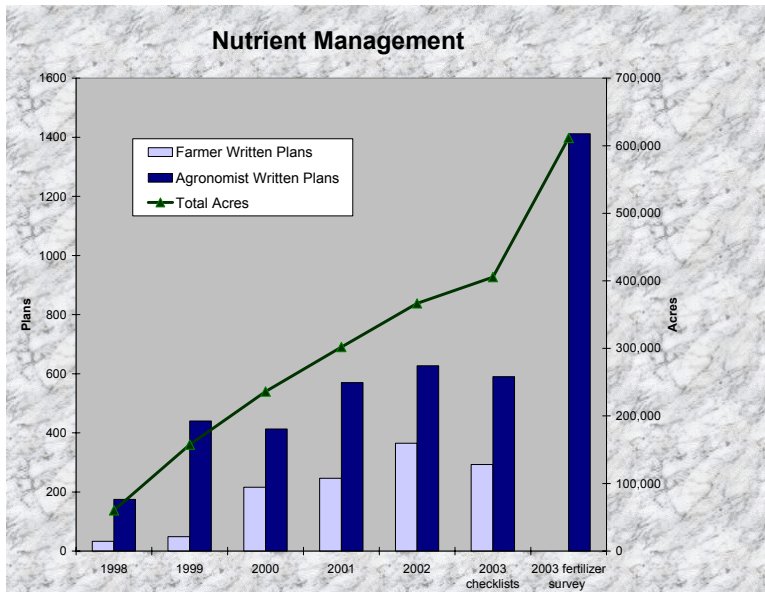


Legend

Total Practices Installed

150 - 1,499 Acres	10,000 - 14,999 Acres
1,500 - 3,999 Acres	15,000 - 25,000 Acres
4,000 - 9,999 Acres	

Data source: 2003 Nutrient Management Plan Checklists Submitted to DATCP



In 2003, DATCP enacted new record-keeping requirements for fertilizer distributors. These suppliers reported 1,412 plans on 611,405 acres. This translates to 12% of the 12,113 farmers purchasing bulk fertilizer had plans that met NRCS technical standard 590 for nutrient management plans.

Through the 2003 *Nutrient Management Plan Checklist*, 40 counties reported nutrient management plans covering 405,572 acres. This was a slight increase from the 366,581 acres that 50 counties reported in 2002. While the total acreage under nutrient management plans increased, fewer counties reported nutrient management plans developed through government cost-sharing programs. DATCP provided cost-sharing for developing plans on only 2,000 acres in 2003 compared to 67,000 acres in 2002. DNR

financial data shows that over \$82,000 was granted for nutrient management planning and soil and manure testing on 25,813 acres in 2003. The checklists also showed 293 farmers prepared their own plans on 71,068 acres. This is 76 (26%) fewer farmers developing plans on 23,565 (33%) fewer acres than reported in 2002 because of less

state funding for farmer training and cost-sharing. As of October 2003, 664 agronomists in Wisconsin hold nutrient management certifications through either the American Society of Agronomy or National Association of Independent Crop Consultants. There are 25 fewer planners since 2000.

Nutrient Management – the Future

Wisconsin is transitioning from a nitrogen-based nutrient management standard towards a phosphorus (P)-based standard, to keep up with the latest NRCS 590 technical standard and changes to federal regulations. State funding for nutrient management is declining, while federal cost-share funding is increasing. During 2003 and 2004, a team of University of Wisconsin (UW) researchers, state

and federal agency staff, and agronomists worked to develop nutrient management planning software that would use both UW nutrient recommendations and the Revised Universal Soil Loss Equation 2 (RUSLE 2) soil loss calculations. The software, called SNAP Plus, will also generate an estimate of the phosphorus loading risks or the “P Index” for each field over the course of a crop rotation. This tool—which should be available in 2005—will bring together conservation and nutrient management planning to provide a comprehensive implementation tool for producers to manage their crop fields.

MANURE MANAGEMENT

Preventing animal manure from entering lakes and streams is a major concern for county land conservation departments and cooperating

Table 2 Manure Management Practices Installed with State Funds

Practice Type (not a complete list)	Quantity Installed		Landowner contracts	
	LWRM	PWP/TRM	LWRM	PWP/TRM
Barnyards, manure storage, roofs, milkhouse waste control, livestock watering, access roads (<i>number</i>)	208	226	202	199
Rotational grazing, heavy use area protection (<i>acres</i>)	158	641	27	16

landowners. Practices to help reduce manure runoff are very popular, but tend to be more expensive than cropland conservation practices. In 2003, 470 landowners used state cost sharing

to install manure management practices, including:

- 434 manure storage structures and practices to control runoff from barnyards, feedlots and milk houses
- nearly 104,000 feet of fencing and diversions
- 800 acres of rotational grazing and other practices to keep manure out of sensitive areas

Table 2 lists the types and number of practices installed. Nutrient management is reported in the previous section.

Manure storage facilities must be constructed and closed according to state standards. All 59 counties with livestock farms have manure storage ordinances to ensure proper construction. Several counties are updating their ordinances to include the performance standards and prohibitions.

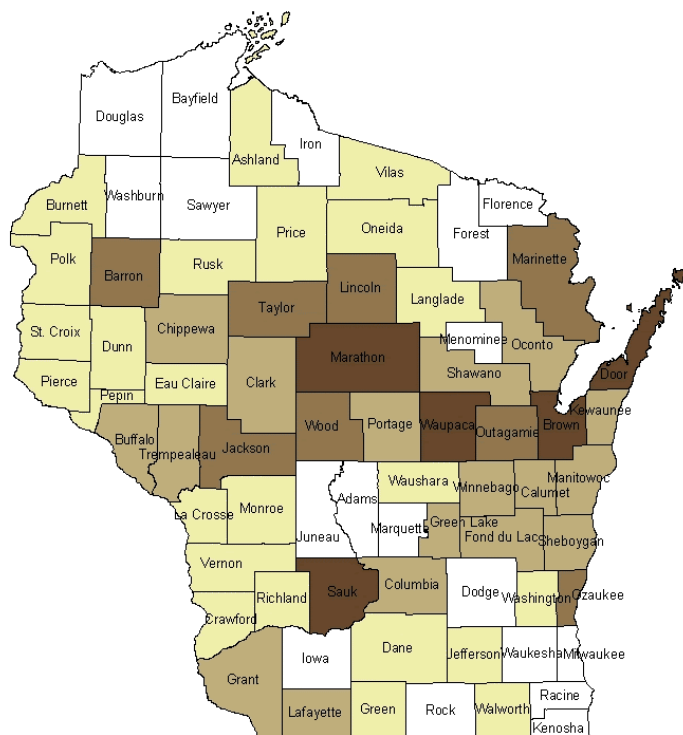
Nutrient Reductions in Priority Watershed & Lake Projects

Forty-two of the 47 active PWP inventories all barnyards and feedlots in the project areas and identified phosphorus from livestock manure in these areas as key water quality problems. Several projects also identified excess phosphorus problems related to improperly stored or applied manure and milkhouse waste, and developed reduction goals for those sources. Three projects tracked reductions in chemical oxygen demand (COD) from BMPs and management changes associated with barnyards and feedlots.

Through 2003, these projects had achieved most of their nutrient reduction goals. (see Table 3)

Livestock Related

Manure Management



Legend

Manure Management Practices

- 1 to 4
- 5 to 9
- 10 to 14
- 15 to 30

Data displayed on map represents conservation practices funded by DNR and DATCP only

Critical Sites

Twenty-two Priority Watershed and Lake projects reported progress on the 289 livestock related critical sites identified in those projects. As of the end of 2003, 268 critical sites-93 percent-had been resolved primarily through the installation of best management practices.

Table 3 Nutrient Reductions in Priority Watershed and Lake Projects

Parameter	Initial loading (lbs./yr.)	Reduction goal (lbs./yr.)	Amt. Reduced (lbs./yr.)	% of goal Achieved
Phosphorus	429,657	189,045	175,140	93
COD	850,856	411,568	294,476	72

Cleaning Up Bass Lake

Bass Lake, located in Marinette County supported a diverse sport fishery including a viable trout population as recently as 1970. Runoff from cropland, barnyards and unconfined manure stacks delivered high levels of nutrients to the lake depleted oxygen in the lake. Over time, the water quality worsened until fish kills occurred, decimating the sport fish population. The 37-acre lake is on Wisconsin's 303(d) list of impaired waters because of high phosphorus, low dissolved oxygen levels and winter fish kills.



Bass Lake was a small-scale Priority Watershed Project selected in 1985. Two livestock operations with a combined total of 700 animal units were identified as the source of phosphorus entering the lake. The Marinette County land conservation department (LCD) worked with the landowners to install state of the art barnyard control practices including barnyards with filter strips, manure storage facilities, clean water diversions and roof runoff controls. The U.S. Fish and Wildlife Service (USFWS), and the Town of Beaver also partnered on the project.

While cooperation from the farmers was described as excellent by county staff, in practice the best management practices (BMPs) did not perform as they were supposed to. Water quality data clearly demonstrated that the filter strips were not adequately filtering barnyard runoff.

In 1999 the county received a Targeted Runoff Management (TRM) grant from the Department of Natural Resources (DNR) to fix the failing BMPs. Wisconsin Stewardship Funds and other funds were used to purchase easements and put 2,000 feet of Bass Lake shoreline and 55 acres of cropland under permanent protection on the farm that chose to discontinue operations. Two water and sediment control basin/wetland restorations were also installed in the easement area. At the second farm, an engineered barnyard and a filter strip were abandoned and the animals moved to a new freestall facility. Other practices were installed, and a sediment control basin and a leachate collection system are planned to virtually eliminate direct runoff to Bass Lake from this farm.

Even with all these improvements in place it would still take a long time before results would show up in the lake. Bass Lake has a maximum depth of 62 feet and averages 23 feet deep with a residence time of 8 years, and it was estimated that it would take 24 years for the lake to respond. During 1999, using Lake Protection grant program funds, the lake was treated with alum to accelerate the response rate and break the cycle of internal phosphorus release and massive algal blooms, and greatly improve water quality in future years.

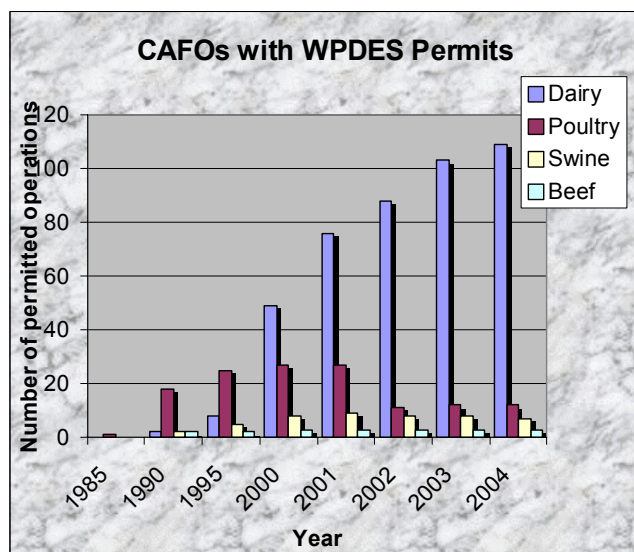
Regulatory Approaches

Notices of Discharge (NODs)

The DNR has been implementing the Notice of Discharge (NOD) program to address water quality impacts from smaller-scale livestock operations since ch. NR 243 of Wisconsin Administrative Code was adopted in the mid-1980's. Operations that were shown to cause significant discharges to state waters, based on DNR inspections in response to citizen complaints, were issued an NOD that specified a certain time period by which the operation had to address the impact. DATCP engineers and county staff provided technical assistance and, if necessary, cost sharing to address the problem. Failure to address the impact resulted in DNR issuing a WPDES permit that would require the operation to address the problem without cost-share assistance.

Historically, the number of NODs issued in a year ranged from 30 to 40. Beginning in 2000, there was a sharp decline in the number of NODs issued, dropping to less than 10 per year. The primary reasons for this decline were a decrease in funding to address NOD-related problems along with a significant increase in DNR workload to issue permits for Concentrated

Animal Feeding Operations (CAFOs). The number of NODs issued dropped further when the primary funding source became the TRM grant program.



Because TRM is a competitive grant program, DNR no longer had a timely and guaranteed funding source for NOD projects.

The Runoff Management administrative rules, which became effective in October of 2002, provided more tools for local units of government (e.g., counties, towns) to address certain agricultural nonpoint related impacts. There remains a need for funds that DNR can more readily direct to recipients of NODs where local units of government are unwilling or unable to implement the performance standards. Funds are also needed to address more severe and immediate water quality impacts that cannot wait for the competitive grant cycle.

Concentrated Animal Feeding Operations

Under ch. NR 243, Wis. Adm. Code, DNR also regulates livestock operations with 1,000 animal units or more. These CAFOs) require a Wisconsin Pollution Discharge Elimination System (WPDES) permit from DNR.

Effective July 1, 2002, a single permit issued to Jennie-O Turkey Store now covers 55 of their operations. Previously, there had been 17 separate permits covering each of the operations that were 1,000 animal units or higher.

NOD Statistics as of Dec. 31, 2003:

- 2:** number of NODs issued during 2003
- 56:** number of active NOD actions underway as of 12/31/03
- 589:** number of since program began
- 3:** notices of noncompliance with agricultural performance standards and prohibitions (NR 151)
- \$6.3 million:** grant dollars to NOD recipients

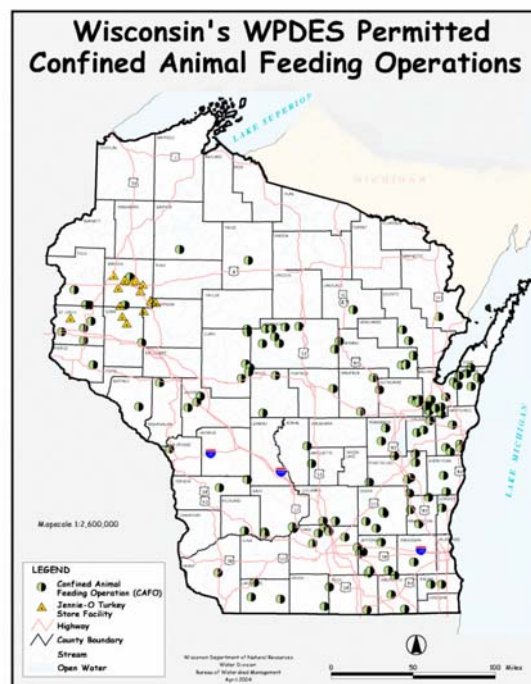
CAFO Statistics as of Dec. 31, 2003

- 126:** number of CAFOs w. WPDES permits:
- 23:** number permits issued during 2003
- 6:** number of permits pending
- 7.6:** permit backlog (backlog goal = 10% or less)

Reflecting this change in permitting for Jennie-O Turkey Store, the total number of permits for Wisconsin has decreased accordingly.

Livestock Siting – The Future

Siting new or expanding livestock operations historically has been a task for local units of government in Wisconsin. Livestock siting has become more contentious in recent years due to the increased size of livestock operations, increased residential development in rural areas, and lack of consistent standards for local officials to use to help guide their decision making process. In July 2003, the Secretary of DATCP appointed a 21-member advisory committee including farmers, environmentalists and local government representatives to provide recommendations to the Governor and Legislature regarding livestock facility siting. Gary Rohde, a former DATCP Secretary, chaired the committee. In April 2004, the Governor signed into law Wisconsin Act 235 that provides a predictable framework for county and municipal decisions to site or expand livestock facilities. DATCP must develop a rule to implement the law. A panel of technical experts met during the summer and early fall of 2004 to develop the standards that will be contained in



the department's administrative rules that implement the legislation. The law goes into effect in November 2005, and is expected to impact 50-70 operations annually that will require local permits.

Calumet County Groundwater Guardians



Groundwater protection is a major goal of the Calumet County Land Conservation Department (LCD). In the past two years, the county tested over 500 private wells, and over 47% of all tested wells had elevated levels of nitrates or bacteria, or both. The percentage of wells with high nitrates or bacteria exceeded 70% in some areas with shallow bedrock.

As a result, the county developed an education program to involve citizens in efforts to increase public awareness of the groundwater resource and groundwater quality. The LCD recruited volunteers to form a citizen group called the Calumet Groundwater Guardians. The LCD assisted in the group's organization, development and implementation of an activity plan through nine meetings and with 110 citizen volunteers.

Together with the LCD, the Groundwater Guardians completed two group well testing programs, two public groundwater educational presentations, and developed and staffed a county fair booth seen by 1200 people.

The Groundwater Guardians also built a parade float on water testing that participated in three municipal parades viewed by 5000 people. Finally, the group handed out 2000 water testing brochures and inserted 5300 flyers into local newspapers.

Among other accomplishments, the program resulted in the abandonment of 22 wells. The County received a grant

For additional information, visit
<http://datcp.state.wi.us/core/environment/land-water/siting.html>

or contact a county land conservation department for a copy of the *Livestock Siting Questions and Answers* brochure.

STREAMBANK, SHORELINES, WATER QUALITY AND HABITAT PROTECTION

Conservation Reserve Enhancement Program

Wisconsin's Conservation Reserve Enhancement Program (CREP), is a cooperative effort with the USDA's Farm Service Agency (FSA) and Natural Resources Conservation Service (NRCS); Wisconsin state agencies DATCP and DNR; and Wisconsin county land conservation committees and landowners. Wisconsin's CREP goal is to enroll 100,000 acres into riparian buffers, filter strips, wetland restorations, grassed waterways, and grassland habitat to improve water quality and grassland habitat for endangered grassland birds and other wildlife.

Landowners can choose to enroll their land in either 15-year agreements or perpetual easements.

During 2003, 48 participating counties made significant progress towards meeting the project goals. Through December 31, 2003, Wisconsin had met approximately 36% of the 100,000-acre

goal, with greatest progress in meeting the grassland goal.

Counties and landowners also made significant progress towards meeting the project's environmental goals. The percentage of the environmental goals met increased significantly from 2002.

From CREP's inception through December 31, 2003, the state of Wisconsin paid almost \$7 million in incentive and practice payments to 1,742 landowners. In addition to the state CREP incentive and practice payments, counties reported that they spent about \$1 million in staff and other local costs to implement CREP.

Table 5 CREP Acres Enrolled

	Maximum Allowed or Goal	Enrolled or In Process December 31, 2003	Percent of Goal
Grassland Projects (acres)	15,000	10,250	68%
Riparian Buffers (acres)	80,000	26,154	33%
Wetland Restoration (acres)	5,000	2,285	46%
TOTAL	100,000	36,404	36%

Wisconsin Progress Report

Table 4 CREP Environmental Goals

	Goal	CREP Accomplishments December 31, 2003	% of Goal*
Miles of Stream or Shoreline Buffered	3,700	865	23%
Pounds of Phosphorus Reduced	610,000	93,500	15%
Pounds of Nitrogen Reduced	305,000	49,100	16%
Tons of Sediment Reduced	335,000	43,800	13%
Grassland Acres	15,000	9,400	63%

State Funded Conservation Practices

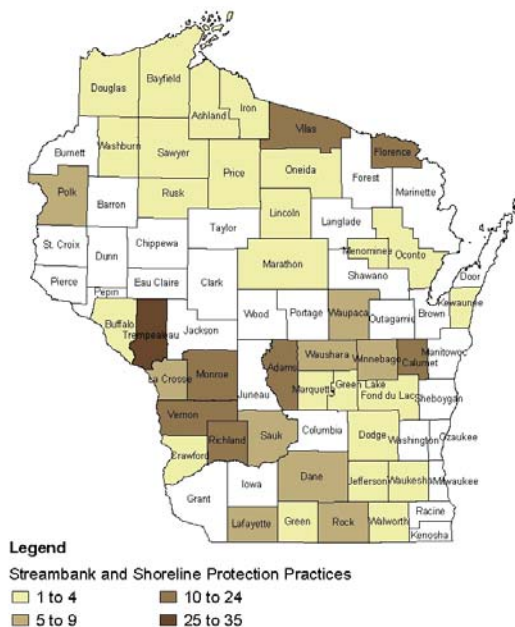
Many landowners used LWRM, TRM and PWP cost-share dollars to install practices that protect and restore streambanks and shorelines, protect groundwater, and improve habitat. These conservation practices were some of the most popular and accounted for most of the practices installed in the northern-third of the state. Partners such as fishing and hunting groups, conservation organizations, friends groups, local conservation staff, U.S. Fish and Wildlife Service, and DNR staff often contribute matching funds along with expertise and labor to make these projects successful.

In 2003, state programs provided cost sharing to 419 landowners for streambank and shoreline BMPs, and to 306 landowners for groundwater protection practices such as well abandonments. Table 6 shows the type and number of practices installed and the number of contracts as a measure of landowners served.

Sediment Reduction

Forty-one of the 47 active Priority Watershed and Lake projects established goals to reduce by 21,716 tons per year the amount of sediment that erodes from streambanks and shorelines, based on total load estimates of 45,894 tons per year. By the end of 2003, those projects

Streambank Protection Practices



Data displayed on map represents conservation practices funded by DNR and DATCP only

reported reductions of 26,849 tons per year, exceeding the reduction goal.

Streambank/Shoreline Critical Sites

Twelve PWWs identified a total of 73 streambank/shoreline erosion sites as critical sources of sediment to surface water. By the end of 2003, 84 percent (61 sites) had been resolved, with 12 remaining.

Table 6 Streambank and Shoreline/Groundwater/Habitat Practices Installed

Practices	LWRM	PWP/TRM	Landowner contracts LWRM	Landowner contracts PWP/TRM
Streambank Fencing, Stream Crossings and other Streambank, Shoreline & Habitat Protection (feet)	45,000	171,908	127	155
Other Streambank, Shoreline Protection Projects (number)	N/A	472	N/A	15
Buffers, Retired Land (acres)	79	35	30	13
Wetlands (acres)	40	90	47	31
Well Abandonments (number)	297	39	270	35
Sinkhole (number)	1	N/A	1	N/A
Pesticide Management (acres)	N/A	14,662	N/A	97

Easements

The acquisition of easements along rivers, streams and lakes has been a long-standing tool used cooperatively by landowners, counties, DNR, NRCS and others to protect water quality. Through 2003, DNR held a total of 1,296 water quality easements encompassing 16,657 acres of land. This includes 65 easements covering 1,407 acres purchased with PWP, TRM and UNPS grants, and 1,231 easements encompassing 15,250 acres purchased for the protection of water quality and fisheries habitat using the state Stewardship Fund and grants from the USFWS.

St. Croix Lakes Cluster, St. Croix County

Squaw Lake, Prairie Flats - North Waterfowl Production Area (WPA)



Squaw Lake is a 129-acre lake that lies in a 9 square mile watershed located in St. Croix and Polk counties. Wetland drainage in the 1940s coupled with agricultural practices in the watershed resulted in heavy phosphorus loading to the lake that led to algal blooms, fish kills, eutrophication, poor water quality and loss of critical wildlife habitat. The lake is included on Wisconsin's 303(d) list of impaired waters, due to excessive nutrients and poor water quality.

Through the St. Croix County Lakes Cluster Priority Watershed Project, farmers have improved nutrient management and cropping practices, reduced winter spreading of manure, and achieved significant reductions in annual nutrient loads to Squaw Lake.

The Prairie Flats North WPA project was undertaken as another "piece of the puzzle" to further reduce nutrient loads. Earthen berms, weirs and water control structures were installed to divert "first flush" spring runoff to a previously ditched low area, and another former upland area. In addition, 74 acres of surrounding cropland are being restored to native prairie. The restored wetlands and prairie are less than ½ mile upstream of Squaw Lake, which will help to reduce sediment delivery to the lake.

URBAN STORMWATER MANAGEMENT

URBAN BEST MANAGEMENT PRACTICES

In 2003, 43 municipalities installed urban practices under TRM and UNPS grants to control stormwater runoff. There were also 20 designs and 58 planning activities funded under these grants for the year. Table 7 shows the type and number of practices installed.

Table 7 *Urban Practices Installed*

Projects	TRM/UNPS	Municipal Grants
Detention ponds, infiltration devices, other practices (number)	182	41
Streambank, Shoreline Protection (feet)	4460	7

DNR STORM WATER PERMIT PROGRAM

Since the mid-1990s, DNR has administered a program to address the issue of polluted urban storm water runoff that comes from such sources as construction sites, lawns, streets and parking lots to storm sewers and is discharged to rivers, streams, lakes and groundwater without treatment. In 2003 and 2004, DNR revised the applicable administrative rules, ch. NR 216, Wis. Adm. Code, to meet the requirements of the Environmental Protection Agency's (EPA) Storm Water Phase II regulations.

Phase II addresses storm water discharges from small municipal separate storm sewer systems (MS4s) that serve less than 100,000 people and construction sites that disturb one to five acres. The rule contains six minimum measures for small MS4s that EPA believes should significantly reduce pollutants in urban storm water. The rule, which became effective August 2004, governs stormwater discharge permits for a large number of municipalities, industrial facilities and construction sites.

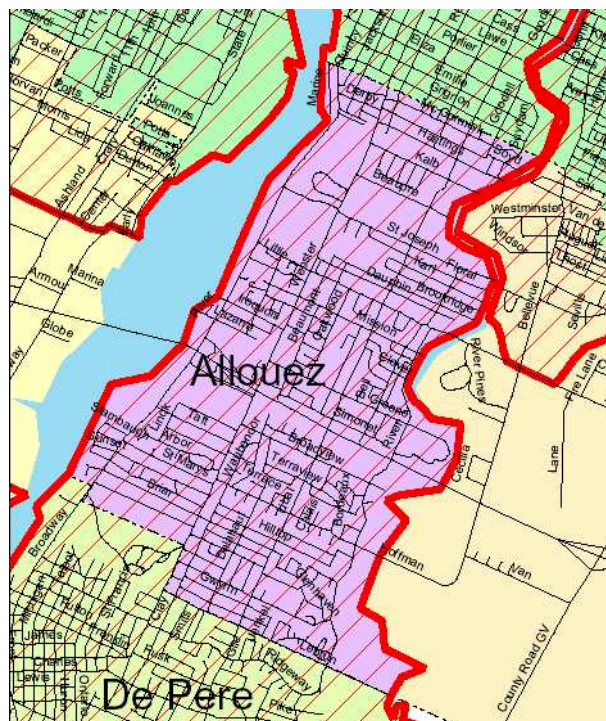
Municipal: Currently, there are 53 municipalities regulated under 19 individual storm water permits. Under the revisions, DNR expects to have 240 municipalities covered under either an individual or general storm water municipal permit.

Industrial: There are currently six industrial storm water general permits that cover 5,800 industrial facilities. There are only two individual industrial storm water permittees (Dane County and the General Mitchell Airport). About 900 of the 5,800 permitted facilities are covered under

the Tier 3 general permit and the majority of them will be moved to the "no-exposure" certification

group. Thus, about 5,000 facilities will remain with general permit coverage and that number is expected to increase by about 1% annually.

Construction: DNR authorizes coverage under a storm water permit for about 500 construction sites per year with five or more acres of land disturbance. In 2003, the number of permit applications (notices of intent) jumped to 1,500—three times as many as the previous yearly averages. DNR expects that number will climb to a five-fold increase (3000 sites annually) with the new one-acre threshold in place.



INFORMATION AND EDUCATION

COUNTY EDUCATIONAL ACTIVITIES

Information and education activities are an important part of the state and county conservation programs, with all counties reporting at least some activities. Education programs ranged from general efforts designed to raise the public's awareness of conservation issues to technical workshops targeted to specific landowners. Many counties focus at least a portion of their information and education efforts on youth, including poster and speaking contests, classroom presentations and envirothons. Most counties also use the information and education programs to recognize landowner conservation achievements.

The most common information and education awareness building efforts include newspaper articles, newsletters, fair displays, and radio shows. These efforts often spurred requests for information from landowners. Many counties also sponsored workshops on erosion control and nutrient management for targeted audiences such as developers, construction workers and farmers.

In addition to the awareness-building activities and the targeted workshops, more than one-third of the counties sponsor water quality testing and volunteer monitoring. Activities typically include drinking water education programs, clean-up days, storm drain stenciling, and in-stream testing. Data collected from the volunteer monitoring programs is used at the county and state levels to help gauge the success of conservation efforts.

BASIN EDUCATION

Wisconsin's Basin Education Initiative is a collaborative approach between University of Wisconsin-Extension, DNR, DATCP, NRCS and FSA to promote land and water resources management in the state's major river basins. Basin Educators for Natural Resources work at the landscape and watershed levels and draw upon statewide support for program evaluation and the development of educational materials.

From July 2003-July 2004, water-related basin educational programs covered topics such as erosion control, stormwater impacts, shoreline

restoration and Smart Growth planning. Many of these efforts are either ongoing or annual events which will continue or expand during the next fiscal year.

A few examples of the many programs and activities on which Basin Educators and their partners worked:

- ♦ A series of 5 construction site erosion control workshops across the state
- ♦ Development of a statewide beach closing hotline that became active Memorial Day weekend and covers beaches in 13 coastal counties.
- ♦ A series of Ditches and Culverts Workshops in 6 sites across the state
- ♦ A Southeast Wisconsin Municipal Stormwater Conference for local officials and engineers.
- ♦ A workshop to introduce the conservation community in the Green Bay area to concepts and tools relating to Smart Growth and comprehensive planning.
- ♦ A Stream Corridor Improvement Workshop.
- ♦ Numerous talks and demonstrations at



schools, community events and fairs covering topics such as rain gardens, groundwater flow and invasive species identification.

Basin Educators also develop publications and other educational materials with support from the UW-Extension Environmental Resources Center Publications Unit and numerous partners throughout UW-Extension, DNR, and other

organizations. The educational tools and publications listed here were developed by, or with the help of, Basin Educators, based on priorities identified by local and statewide partners:

- ◆ Twenty-two new Wildcards.
- ◆ A brochure on the proper care, handling and planting of tree seedlings, to be handed out with every tree order at state nurseries
- ◆ A four-panel kiosk and six trail signs for the Pigeon Creek Trail the Black River State Forest.
- ◆ Milwaukee River Basin map.
- ◆ Citizen Planning Website, which can be accessed at <http://clean-water.uwex.edu/plan/index/htm>
- ◆ Map in poster format of the Black-Buffalo-Trempealeau Basin.
- ◆ Map in poster format of the La Crosse-Bad Axe Basin.
- ◆ A rain garden informational/promotional sign.
- ◆ Fish Friendly Culverts fact sheet.
- ◆ A Rain Gardens Educator's Kit, including photos, presentations, relevant publications, speaker lists and links to web resources.
- ◆ A new version of the Wonderful Wacky Water Critters booklet.
- ◆ A summary report for the Multi-Agency Land and Water Education Grant-funded pasture demonstration project, which examined the growth and longevity of four pasture species (perennial ryegrass, kura clover, white clover and reed canary grass) on ten different farms.

More information at
<http://basineducation.uwex.edu>

VOLUNTEER STREAM MONITORING

Each year, about 800 Wisconsin volunteers monitor the water quality of their local streams or rivers and report their findings on the internet. Hundreds more take part in river clean-up days and stenciling storm drains with messages of "Dump No Waste—Drains to Stream" (or River or Lake). All this is facilitated through Water Action Volunteers (WAV), a partnership between DNR and UWEX. WAV trains volunteers and provides them with the checklists and other publications

they need to measure parameters such as stream flow, dissolved oxygen, temperature, turbidity, habitat and macroinvertebrates. Monitoring equipment is available to volunteers through Watershed Education Resource Centers, which act as lending libraries for local citizens.

WAV stream monitoring efforts continue to grow toward central, northwestern and northeastern

150:	<i>number of volunteer groups monitoring wadeable streams and rivers</i>
250:	<i>number of monitoring sites registered in the WAV database</i>
135:	<i>number of streams monitored</i>
26:	<i>number of counties with WAV program volunteers</i>
2000:	<i>number of days that volunteers devoted to monitoring</i>
25:	<i>number of local volunteer monitoring programs</i>
1250:	<i>number of volunteer monitors (250 adults, 1000 students)</i>
400:	<i>number of monitors trained in 2003</i>

Wisconsin. In addition, WAV will be partnering with DNR biologists and University of Wisconsin researchers to monitor crayfish in wadeable streams. Volunteers will collect crayfish and send them to the university for identification and development of locator maps for the various types of crayfish in the state, including the invasive rusty crayfish. WAV will also participate in an Upper Midwest research project to test a variety of *E. Coli* monitoring test kits versus laboratory methods and to test the usability of the kits for volunteers in the field. Pilot testing using the recommended method will begin in Wisconsin in 2005.



Rusk County's Environmental Challenge Program

Rusk County's Land Conservation Department (LCD) believes that a key element to successful land conservation program is an educational campaign design to reach diverse audiences. One of the most prominent educational efforts is the county's Environmental Challenge Program. This is an annual, seven-month outdoor education activity that involves every eighth grader in the county's four school districts. The students identify environmental problems and analyze and choose solutions. High School students implement the chosen solution during the summer. In 2003, forty high school students and four college interns constructed a wetland walkway, constructed a blue bird trail with 175 houses, improved over 1700 feet of streambank, created trout habitat, and built cattle fences.



Thanks to the county land conservation committees and staff, and cooperating landowners, for their commitment to protecting and improving Wisconsin's land and water resources.